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Chapter 1
Summary

King County is proposing to build a new regional wastewater treatment system, called Brightwater, by the year 2010. The Brightwater Regional Wastewater Treatment System will include a treatment plant to provide secondary treatment of wastewater, pipelines and pump stations to carry wastewater to and from the plant, and an outfall to discharge the treated wastewater to Puget Sound. King County proposes to build the treatment plant at one of two locations: the Route 9 site north of Woodinville in unincorporated Snohomish County or the Unocal site in Edmonds (Figure 1-1).

King County issued a Draft Environmental Impact Statement (EIS) on the Brightwater proposal in November 2002 consistent with the State Environmental Policy Act (SEPA). The EIS has been revised in response to comments on the Draft EIS. This Final EIS is composed of several documents: the text of the EIS and attachments, the technical appendices, the responses to comments on the Draft EIS, a summary of technical seminars held for the public between the Draft and Final EIS and copies of comments received, and documents incorporated by reference.

This chapter summarizes the information contained in the Brightwater Final EIS. The chapter begins with an overview of the proposal to build a new wastewater treatment plant, associated conveyance facilities, and a marine outfall to meet the needs of population growth in north King and south Snohomish Counties. It briefly describes the three alternative systems being evaluated: the Route 9–195th Street System (Preferred Alternative); the Route 9–228th Street System; and the Unocal System. The No Action Alternative is also considered. Other information presented in this chapter includes a summary of the project's construction schedule and environmental impacts, a discussion of areas of uncertainty and issues to be resolved related to the Brightwater project, and a discussion of the programmatic and project-level environmental review for a new wastewater treatment system. Please note that all references and figures cited within this chapter can be found at the end of the chapter.

1.1 Proposal

The proposed regional wastewater treatment system would be constructed in north King County and south Snohomish County. It would provide secondary treatment capacity in 2010 for 36 million gallons per day (mgd) average wet-weather flow (AWWF)[1] of wastewater, with anticipated expansion in about 2040 to 54 mgd AWWF. The new

[1] Average wet-weather flow (AWWF) – The average daily volume of flow during winter months.

system would fulfill commitments to provide wastewater services to local governments and sewer service providers in the King County Service Area. It would provide more flexibility in the operation of the regional wastewater system, and it would provide services that are cost-effective.

The design of the treatment plant at either the Route 9 or Unocal site would include the same basic features:

- Processes that provide secondary treatment of wastewater consistent with state and federal requirements
- Treatment of the solids to produce biosolids suitable for application to agricultural and forestry lands or for use in composting
- Treatment of the solid byproducts to produce methane for energy to run the plant
- Advanced treatment of a portion of the wastewater to produce reclaimed water for onsite and offsite nonpotable uses such as landscape irrigation, cleaning, and industrial process water
- Odor control systems designed to the highest standards in the United States
- Facilities designed to be architecturally compatible with the surrounding neighborhood

The proposal includes modifying existing conveyance facilities—pipelines and pump stations—and constructing new facilities that would connect the existing system to the new system. The existing system now conveys wastewater flows from northeast and north King County and south Snohomish County to King County's existing treatment plants in Seattle and Renton. New conveyance facilities would collect and convey influent (untreated wastewater) to the Brightwater Treatment Plant and convey effluent (treated wastewater) from the Brightwater Treatment Plant to a marine outfall in Puget Sound. An outfall is a pipeline that carries effluent through the shoreline and offshore areas to a diffuser, a structure at the end of the outfall pipeline that discharges and mixes the effluent into receiving waters.

Two alternative zones for an outfall pipeline and diffuser are being considered in an area of Puget Sound between the City of Edmonds and the City of Shoreline. The outfall zone for the Route 9 site (Zone 7S) lies offshore of Point Wells west of Shoreline and Woodway; the outfall zone for the Unocal site (Zone 6) lies offshore of Edwards Point in Edmonds. Both sites are located in areas with currents that encourage rapid mixing and dilution of the effluent with marine waters and movement with the currents within and out of Puget Sound.

This EIS also considers two sub-alternatives for the Unocal System. One sub-alternative would build a structural "lid" over a portion of the treatment plant site to accommodate the State Route (SR)-104 Edmonds Crossing project; the other sub-alternative would treat flows from the Cities of Edmonds and/or Lynnwood at the Brightwater Treatment Plant.

1.2 Preferred Alternative

The King County Executive has identified the Route 9 System with an effluent corridor along NE 195th Street and a marine outfall in Zone 7S as his Preferred Alternative because of the relative impacts, efficiencies, and flexibility it would provide. The Route 9 site is twice the size of the Unocal site, making it easier to engineer and build the plant; it would require less excavation; and it would provide more room for a landscaped buffer. The design of a conveyance system for the Route 9 site and the manner in which it would connect to the existing King County system also would provide more operational flexibility than the Unocal System, both for sending flows to other treatment plants during emergencies and for providing reclaimed water to users near the plant and along the effluent pipeline in the future.

The Executive prefers construction of tunnels for placement of conveyance pipelines rather than open-cut construction because of the lower overall impact and lower operation and maintenance cost of tunnels. The 195th Street corridor is preferred over the 228th Street corridor for the Route 9 site because the total conveyance route for the 195th Street alternative is shorter (15.9 miles compared to 20.3 miles for the 228th Street alternative), and it has fewer primary portals (5 compared to 7 for the 228th Street alternative). Fewer portals would result in fewer traffic impacts than would occur along SE/SW 228th Street, which is a major transportation corridor. In addition, the properties within the portal siting areas along the 195th Street corridor are less densely developed with homes and businesses than those along both the 228th Street and Unocal corridors; therefore, overall impacts to homes and businesses would be less.

While tunneling is preferred for the conveyance pipelines, open cut is the preferred construction method for the marine outfall. Open cut is a known construction method. While open cut would have impacts that would not result from tunneling, the success of tunneling under Puget Sound is uncertain, and, if tunneling under the nearshore were to prove unsuccessful, the overall impacts would be greater since it would be necessary to use open cut in the end after all.

Outfall Zone 7S is preferred over Zone 6 for several reasons. There is less eelgrass present along the preferred alignment in Zone 7S, and the length of construction through the nearshore would be 700 feet compared to 950 feet in Zone 6. Thus, constructing an outfall in Zone 7S would result in less impact on the nearshore habitat. In addition, the construction staging area in Zone 7S would be located in an industrial area rather than near a shoreline with heavy public use as in Zone 6 on the Edmonds waterfront; thus, there would be less disruption to recreational users. The staging area for Zone 7S would be located on the west side of the railroad tracks rather than on the east side, and there is more land available for a staging area, which would allow the use of construction methods that could not be used at the smaller site in Zone 6, such as fabrication of long sections of the outfall onsite and bottom pull of the pipeline seaward from the shoreline.

Each of the three system alternatives analyzed in this EIS are viable alternatives. Being the King County Executive's Preferred Alternative does not mean that the Route 9–195th

Street System ultimately will be selected. The final decision will be based on several considerations: the analysis in the EIS; comments from federal, state, and local agencies and tribal governments; comments from the public and elected officials; and other factors such as cost and regional policies. The Executive will make a final decision in late 2003 after completion of the Final EIS.

1.3 Purpose and Need for Proposal

The Regional Wastewater Services Plan (RWSP), adopted in 1999, sets forth both the purpose and need for a new wastewater treatment system to be in place by 2010.[2] The RWSP outlines the region's long-term wastewater treatment needs and identifies regional policies that call for a new 36-mgd to 54-mgd treatment plant to be located in north King County or south Snohomish County. These regional policies were developed further in subsequent ordinances adopted by the King County Council.[3]

Over 2 million people live and work in King County's wastewater service area, which includes residents and employees in King, Snohomish, and Pierce Counties. They take showers, wash clothes and dishes, flush toilets, and perform other routine functions that use water. These activities, combined with commercial and industrial water uses as well as groundwater and stormwater that enter the conveyance system, generate an average of more than 200 million gallons of wastewater each day. In the past, this wastewater flowed largely untreated into Lake Washington and Puget Sound, where it degraded water quality significantly. In 1958, residents rallied to clean up these waters, leading to the development of the regional wastewater system that exists today. This regional system has helped protect water quality and public health in King County and portions of Snohomish and Pierce Counties for over 40 years.

Now the existing regional system is running out of capacity, an issue that was evaluated in the RWSP. Forecasts of population growth predict that by the year 2040, approximately 1 million additional people will live and work in King County's wastewater service area, and an additional 74 mgd AWWF will enter the system. At this rate, new capacity must be added to the regional wastewater system by the year 2010 to treat the additional wastewater that would otherwise flow untreated into streets and waterways. By providing additional capacity when needed, Brightwater would help to preserve the region's water quality and protect public health and safety for future generations. Brightwater also will allow King County to meet applicable state and federal

[2] An environmental impact statement was prepared for the RWSP in April 1998 entitled *Final Environmental Impact Statement for the Regional Wastewater Services Plan* (RWSP EIS) (King County, 1998). The RWSP EIS is incorporated in its entirety into this Brightwater EIS. (Please see the Fact Sheet at the beginning of this document.)

[3] Ordinance 14043, adopted on March 2, 2001; Ordinance 14107, adopted on May 24, 2001; and Ordinance 14278, adopted on December 10, 2001. A SEPA checklist was prepared and a Determination of Nonsignificance was issued prior to adoption of each of these ordinances.

regulations and satisfy contracts with local sewer service agencies in King and Snohomish Counties.

1.4 The Benefits and Disadvantages of Reserving for Some Future Time the Implementation of the Proposal

As stated in the State Environmental Policy Act (SEPA) (WAC 197-11-440[5][c][vii]), an agency preparing an EIS should discuss the benefits and disadvantages of reserving for some future time the implementation of the proposal, as compared with possible approval at this time. The agency perspective should be that each generation is, in effect, a trustee of the environment for succeeding generations. Particular attention should be given to the possibility of foreclosing future options by implementing the proposal. King County has evaluated the issues and impacts associated with delaying or moving ahead with the Brightwater System.

Some factors might favor reserving implementation of the Brightwater proposal until a future time:

- Population and employment in the Brightwater Service Area possibly could grow at a slower rate than currently projected, thus lessening the need for Brightwater.
- King County's Regional Infiltration and Inflow Control Program could prove to be extremely successful in reducing infiltration and inflow to a degree that would allow delaying construction or reducing the size of the treatment system.
- New technologies could become available at a later time that could increase effluent quality, more effectively control odors, or increase operational efficiencies at the treatment plant.

Another benefit of waiting until some future time to implement the Brightwater proposal is that it would lessen or eliminate some short-term environmental impacts. For example, if the Route 9 site is selected for the Brightwater treatment plant and the plant is built according to the currently proposed schedule, some construction would occur at the same time that the Washington State Department of Transportation is planning to widen SR-9 adjacent to the site. This could result in significant traffic congestion for a period of up to 2 to 3 years. Delaying the construction of a treatment plant at the Route 9 site until the widening of SR-9 has been completed would be one way to reduce traffic impacts during Brightwater construction, since more highway capacity would be available to accommodate construction vehicles once the SR-9 improvements are in place.

Building the Brightwater Regional Wastewater Treatment System at some future time after 2010 would have disadvantages as well:

- If population and employment in the Brightwater Service Area do, in fact, grow at the projected rate, if King County's Regional Infiltration and Inflow Control Program does not reduce infiltration and inflow to a significant degree, and if the capacity needed to convey and treat projected wastewater flows is not in place by the year 2010, untreated wastewater would overflow into streets and waterways with increasing frequency. This would pose a risk to public health and safety and water quality in the region.
- The failure to provide needed infrastructure for wastewater treatment to the region would undermine land use plans and programs adopted under the Washington State Growth Management Act (GMA). These plans and programs include the Regional Wastewater Services Plan and the comprehensive plans of affected jurisdictions in north King County and south Snohomish County (see Documents Incorporated by Reference in the Fact Sheet at the beginning of this Final EIS). Successful and timely implementation of the infrastructure called for in local GMA plans is essential for meeting the environmental, land use, housing, and economic development goals of the GMA, as well as for providing a good quality of life for citizens in this region.
- History generally has shown that delaying the cost of a large capital project, such as Brightwater, is likely to increase the ultimate cost of construction.
- As development and redevelopment continue to occur in north King County and south Snohomish County, it will become increasingly difficult to find properties that are large enough to construct a regional wastewater treatment system. Delaying construction of Brightwater as land becomes even more scarce would result in greater disruption to the community when it ultimately becomes necessary to build a new system.

The need to consider many different factors and make balancing judgments—taking into consideration the general welfare; social, economic, and other requirements; and essential policy issues—is contemplated by SEPA in WAC 197-11-448. In the end, King County must weigh and balance alternatives and make decisions about the timing of the Brightwater proposal.

1.5 Siting Process Background

Following adoption of the Regional Wastewater Services Plan in late 1999, King County began a search for alternative locations for the Brightwater facilities using a three-phase approach. The goal of Phase 1 was to identify a small group of potential sites for the treatment plant from a pool of over 100 potential sites using policies (site screening criteria) adopted by the King County Council. Phase I, completed in May 2001, identified six candidate sites for the treatment plant and eight candidate outfall zones in Puget Sound. The King County Council accepted these candidate sites for further evaluation and also established a set of refined policies (site selection criteria) for use in narrowing

the number of sites under Phase 2. Environmental review was conducted in conjunction with these King County Council decisions.

Phase 2 of the siting process considered complete "candidate systems" for each of the six candidate sites for a treatment plant; each system included a conceptual treatment plant layout and two construction options for the conveyance pipelines serving the plant and for the marine outfall. One construction option for the conveyance pipelines and the marine outfall involved burying the pipes at relatively shallow depths using open-cut construction; the other option involved tunneling the pipes deep underground. Developing these six candidate systems allowed King County to compare them consistently and fairly, especially in relation to cost and potential impacts.

Phase 3, the current phase of the siting process, consists of the continued review of the proposal in this environmental impact statement and a decision at the end of this phase by the King County Executive on the system that will be developed during final design. In September 2001, the Executive transmitted a recommendation to the King County Council to advance two alternative treatment plant sites, Route 9 and Unocal, for continued environmental review in Phase 3, and the Council approved the recommendation on December 10, 2001. Three system alternatives based on those sites, in addition to the No Action Alternative, are evaluated in this EIS (Figures 1-2, 1-3, and 1-4). Two system alternatives are based on siting the Brightwater Treatment Plant at the Route 9 site in unincorporated Snohomish County just north of the City of Woodinville. One system alternative is based on siting the Brightwater Treatment Plant at the Unocal site in Edmonds. When the Executive makes his final decision, the siting process will conclude, and the project will move into the final design and permitting phase. Additional analysis and public participation will be involved in the upcoming local, state, and federal permit and approval process required for the Brightwater facilities.

1.6 Alternatives Evaluated in This EIS

This section provides a broad overview of the treatment, conveyance, and outfall characteristics of each of the three action alternatives and the No Action Alternative being evaluated in this EIS. The three action alternatives also are illustrated in the large System Alternatives map on the inside of the back cover of this volume. Please see Chapter 3 for a more detailed discussion of the alternatives.

1.6.1 Refinements Since the Draft EIS

Following publication and review of the Draft EIS, King County revised and/or further mitigated some elements of the proposal in response to comments on the Draft EIS and additional technical evaluation. These mitigation-based revisions and refinements included the following:

- Reducing the number of portal siting areas[4] along the conveyance routes for all three alternatives by about half. Primary portal siting areas are those that clearly would be needed to build one of the three action alternatives. The remaining portal siting areas are termed "secondary." Secondary portal siting areas are those that are likely to not be needed or to be needed for a less-intense use.
- Eliminating Portal Siting Area 10 in Lake Forest Park from the Route 9 conveyance alternatives.
- Designating Portal Siting Area 10 in Lake Forest Park as a secondary portal for the Unocal Alternative (rather than as a primary portal as it was in the Draft EIS).
- Revising the Route 9 alternatives to eliminate consideration of the force main-gravity conveyance option for effluent transfer, thus eliminating the need for an effluent pump station on the Route 9 site.
- Realigning the eastern portion of the conveyance pipeline for the Route 9 alternatives so that more construction would take place in existing rights-of-way along established roadways as much as possible in order to reduce impacts to private properties.
- Reducing the tunnel length of the Route 9–195th Street conveyance corridor by placing the influent and effluent pipelines in a combined tunnel in the eastern portion of the corridor.
- Identifying smaller areas within the 72-acre portal siting areas for construction of tunnel portal facilities.
- Proposing split-flow membrane bioreactor technology for secondary treatment of wastewater, rather than full-flow conventional activated sludge, in order to provide better effluent quality.
- Adding a fourth stage of odor treatment (carbon polishing) and enclosing all process facilities in order to provide better odor control.
- Including the StockPot, Inc., property in the Route 9 site design.
- Including a Community-Oriented Building as a possible mitigation measure on the Route 9 site.
- Revising the stormwater management system on the Route 9 site to enhance natural stormwater treatment and to eliminate the stormwater pump station.
- Considering the option of constructing the Route 9 influent pump station in Portal Siting Area 41 rather than on the Route 9 site.
- Identifying alignments and nearshore construction methods for the marine outfall.

[4] Portal siting areas are areas within which portals are excavated to serve as access points for constructing the conveyance tunnels.

Details about the revisions and refinements are provided in the description and comparison of alternatives in Chapter 3. All of these revisions further mitigate the impacts of the original proposal and/or reduce costs.

1.6.2 Route 9–195th Street System

The Route 9–195th Street System would consist of a treatment plant built at the Route 9 site in unincorporated Snohomish County north of Woodinville and a conveyance corridor that would include both an influent pipeline extending north and east from existing pipelines in Kenmore and Bothell to the treatment plant site and an effluent pipeline from the treatment plant site to an outfall in Puget Sound (Figure 1-2). The effluent pipeline would follow a corridor that extends southwest from the treatment plant site along SR-522 to NE 195th Street in King County and then would follow NE 195th Street to Ballinger Way NE (SR-104). At this intersection, the corridor would turn northwest along Ballinger Way NE to NE 205th Street. From there, it would follow NE 205th Street to outfall Zone 7S near Point Wells west of Shoreline and Woodway.

1.6.2.1 Treatment Plant Location and Layout

The Route 9 site is located in unincorporated Snohomish County east of SR-9, just north of the intersection of SR-9 and SR-522 and the City of Woodinville. It consists of parcels owned by various individuals, businesses, and organizations. The StockPot property on the eastern edge of the site was added to the proposed site after the Draft EIS was issued. The Route 9 site is now 114.3 acres and is roughly rectangular in shape. The northern 37.3 acres of the site, which is outside of the Urban Growth Area, is largely undeveloped; it is partially forested and contains wetlands. Wastewater facilities are not proposed in this northern area. The central and southern portions of the site are developed for commercial and industrial land uses. Street access to the site would be at the intersection of SR-9 and 228th Street SE as well as at one other location along SR-9.

Wastewater treatment and stormwater facilities would be built in the southern portion of the site, all of which lies within the Urban Growth Area. The footprint for a 36-mgd treatment plant using membrane bioreactors, with room for future expansion to 54 mgd, would occupy 43 acres. Facilities in this area would include process facilities, Administrative and Maintenance Buildings, possibly a Community-Oriented Building, and roads. Stormwater detention and treatment systems, including ponds and bioswales, would be constructed in the western portion of the site within the Urban Growth Area. Compensatory wetlands and a fish pond would be constructed in the north portion of the site that lies outside of the Urban Growth Area. The total footprint for treatment plant facilities, stormwater systems, and compensatory wetlands would occupy about 80.6 acres. Additional area would be used for wetland enhancement and buffers between treatment facilities and the property line.

1.6.2.2 Conveyance Features

The proposed conveyance system for the Route 9–195th Street System has been revised since publication of the Draft EIS to further mitigate impacts. The number of primary portal siting areas has been reduced, and the eastern portion of the conveyance pipeline has been realigned:

- Portal siting areas would be located along the conveyance corridor. The number of primary portal siting areas has been reduced from 10 to 5. Primary portal siting areas, those that clearly would be needed to build the 195th Street System, are Portal Siting Areas 5, 11, 19, 41, and 44[5]. Secondary portal siting areas, those that are likely to not be needed or to be needed for a less-intense use, are Portal Siting Areas 7, 23, 27, and 45. Portal Siting Areas 10 and 34 in Lake Forest Park and Kenmore are no longer part of the 195th Street System. Portal Siting Area 5, which was previously proposed for the Unocal alternative, is now proposed as a primary portal for the Preferred Alternative.
- The influent portion of the pipeline corridor has been realigned to further mitigate impacts. The Draft EIS stated that the influent portion of the corridor would travel cross-country from Portal Siting Area 11 to the treatment plant site. The revised influent corridor would travel 8.1 miles along existing rights-of-way and/or along established roadways. It would begin near 68th Avenue NE and NE 175th Street, travel north along 68th Avenue NE, turn east along NE 195th Street, turn northeast along SR-522, and terminate at an influent pump station on the treatment plant site. (King County is considering the possibility of locating the pump station offsite in Portal Siting Area 41.) An influent pump station would be needed to lift the wastewater from the tunnel up to the treatment plant level for processing.
- The eastern portion of the effluent corridor also has been realigned. The effluent corridor would carry treated wastewater 12.6 miles to an outfall in Puget Sound. The eastern 4.8 miles of the pipeline, from the treatment plant site along SR-522 and NE 195th Street to Portal 44 at 80th Avenue NE, would be placed in the same tunnel as the influent pipeline. From there, it would travel westward in a separate tunnel to Ballinger Way NE/SR-104, turn northwest to the King-Snohomish County line at 15th Avenue NE, and then travel west along the county line to an outfall in Zone 7S offshore of Point Wells. The total tunnel length—influent, combined, and effluent—would be 15.9 miles.

[5] Portal siting area numbers reflect the numbered designations the areas were assigned in early evaluations of the areas. Many portal siting areas were dropped from further consideration, but the original numbering designations have been retained for consistency; therefore, portal siting areas are not numbered sequentially in this Final EIS.

1.6.2.3 Marine Outfall

The outfall pipe and diffuser for the Route 9–195th Street System would be placed within outfall Zone 7S. The marine outfall would start at Portal 19 at Point Wells, continue on land to the tip of Point Wells, then cross the shoreline into Puget Sound. The marine outfall would extend about 5,200 feet offshore, ending in a 500-foot diffuser at approximately –600 feet mean lower low water (MLLW). The diffuser would be designed to ensure significant mixing of treated wastewater with surrounding marine waters.

1.6.3 Route 9–228th Street System

The Route 9–228th Street System would include the same treatment plant site, influent corridor, and outfall zone as the Route 9–195th Street System. However, the alignment for the effluent portion of the corridor would differ from the influent corridor and the 195th Street alignment, and it would not be placed in a combined tunnel with the influent corridor. Generally, it would travel along 228th Street SE/SW in Snohomish County. The effluent tunnel also would have a different set of portal siting areas, as described below and illustrated in Figure 1-3.

1.6.3.1 Conveyance Features

The conveyance system for the Route 9–228th Street System has been revised since publication of the Draft EIS to further mitigate impacts. The influent portion of the corridor has been realigned, as described for the 195th Street System, and the number of primary portal siting areas has been reduced from 12 to 7. Primary portal siting areas, those that clearly would be needed to build the 228th Street System, are Portal Siting Areas 11, 19, 26, 33, 39, 41, and 44. Secondary portal siting areas, those that are likely to not be needed or to be needed for a less-intense use, are Portal Siting Areas 22, 24, 30, and 37. Portal Siting Areas 10 and 34 in Lake Forest Park and Kenmore are no longer part of the 228th Street System.

The effluent portion of the corridor, which generally would follow public rights-of-way, would carry treated wastewater 12.2 miles to an outfall in Puget Sound. From the Route 9 site, it would follow the 228th Street SE/SW right-of-way to a point near the intersection of 228th Street SW and 95th Place W in Edmonds. Here, the corridor would turn south and generally follow 100th Avenue W to the King-Snohomish County line. From there, it would follow NE 205th Street to outfall Zone 7S near Point Wells west of Shoreline.

1.6.3.2 Marine Outfall

The outfall pipe and diffuser for the Route 9–228th Street System would be the same as for the Route 9–195th Street System. It would be placed within outfall Zone 7S. The marine outfall would start at Portal 19 at Point Wells, continue on land to the tip of Point Wells, then cross the shoreline into Puget Sound. The marine outfall would extend about 5,200 feet offshore, ending in a 500-foot diffuser at approximately –600 feet MLLW. The diffuser would be designed to ensure significant mixing of treated wastewater with surrounding marine waters.

1.6.4 Unocal System

The Unocal System features a treatment plant located at the Unocal site in the City of Edmonds, an influent pipeline to carry untreated wastewater from King County's existing pipelines near SR-405 in Bothell through Kenmore and Lake Forest Park to Edmonds, and a marine outfall located off the Edmonds shoreline in Zone 6 (Figure 1-4). Because the treatment plant would be located near Puget Sound, the Unocal Alternative does not need an effluent pipeline. Treated effluent would be discharged directly from the plant through an outfall to Puget Sound.

1.6.4.1 Treatment Plant Location and Layout

The Unocal site is located in the City of Edmonds and is owned by the City of Edmonds and the Unocal Corporation—an international oil and natural gas exploration and production company. Unocal formerly used the site to store petroleum products, though the company has subsequently removed the storage tanks. The 52.6-acre property is bounded by wetlands and a creek to the northeast, residences to the south and southeast, and a railroad, marsh, marina, and beach to the west and northwest. The site slopes up from the wetland and beach areas. The 48.1-acre portion of the site east of the railroad tracks would be terraced in order to provide sufficient level grade for the treatment facilities. Street access to the site would be from SR-104 and Pine Street. Pine Street would be relocated along the south property line. The 4.5-acre portion of the site owned by the City of Edmonds west of the railroad tracks (Marina Beach Park) would remain parkland.

The footprint for a 36-mgd treatment plant using membrane bioreactors, with room for future expansion to 54 mgd, would occupy approximately 34.5 acres. Facilities in this area would include process facilities, Administrative and Maintenance Buildings, a stormwater management system, and roads. Buffers on this site would be relatively narrow compared to those at the Route 9 site.

1.6.4.2 Conveyance Features

The conveyance system for the Unocal System has been revised since publication of the Draft EIS to further mitigate impacts. The influent corridor still would begin in the vicinity of the existing North Creek Pump Station in Bothell and travel west to the Unocal site; however, the number of primary portal siting areas has been reduced from 8 to 4. The 11.6-mile-long corridor generally would follow a straight path from the North Creek Pump Station westward to the Kenmore Pump Station in Kenmore, where a new pump station would be built. From there, the corridor would travel generally westward along Bothell Way NE (SR-522), turn northwest along Ballinger Way NE/SR-104, turn west on NE/NW 205th Street, turn northwest on Edmonds Way/SR-104, and finally turn west along Pine Street to an influent pump station on the Unocal site.

Portal siting areas are located along the conveyance corridor. Primary portal siting areas, those that would be needed to build the Unocal System, are Portal Siting Areas 3, 7, 11, and 14. Secondary portal siting areas, those that are likely to not be needed or to be needed for a less-intense use, are Portal Siting Areas 5, 10, 12, and 13.

1.6.4.3 Marine Outfall

The marine outfall for the Unocal System would be located in Zone 6 offshore of Edwards Point near the Unocal treatment plant site. It would start at an effluent pump station on the Unocal site, continue on land toward the shoreline, then head west into Puget Sound. The marine outfall would extend about 5,750 feet offshore, ending in a 500-foot diffuser at approximately –600 feet MLLW. There is a marine sanctuary at the north end of Zone 6 and a major structure in the water (the former Unocal pier). As with outfall Zone 7S, the discharged wastewater effluent would mix thoroughly with surrounding marine waters.

1.6.4.4 Unocal Sub-Alternatives

Two sub-alternatives for the Unocal system are evaluated in this EIS. One would build a structural “lid” over a portion of the treatment plant site to accommodate a multimodal transportation facility (the Edmonds Crossing project). The other would expand the plant from 54 mgd to up to 72 mgd in 2040 to treat flows from the Cities of Edmonds and/or Lynnwood. Each sub-alternative is described in more detail later in this chapter and in Chapter 3.

1.6.5 No Action Alternative

Under the No Action Alternative, King County would not implement the part of the Regional Wastewater Services Plan that calls for construction of a third wastewater

treatment plant, associated conveyance system, and marine outfall. Other RWSP programs and projects, however, would be implemented under the No Action Alternative. These include the following:

- Expand the South Plant in Renton to provide an additional 20 mgd of capacity in 2029 and beyond.
- Construct conveyance system improvements.
- Improve solids handling at the West Point Plant.
- Continue implementing a combined sewer overflow program to reduce the volume of excess untreated wastewater discharged during storm events into the Lake Washington Ship Canal, the Duwamish River, and Puget Sound.
- Continue implementing the program to reduce the amount of infiltration and inflow (groundwater and stormwater) that enters the conveyance pipelines through cracked pipes, leaky joints, manhole covers, and illegal connections such as storm and roof drains.
- Continue the Industrial Waste and Household Hazardous Waste programs to improve the quality of wastewater and biosolids.
- Identify opportunities to recycle and reuse reclaimed water.
- Implement water conservation measures.

1.7 Project Timing and Phasing

The implementation schedule for the 36-mgd treatment system would generally be the same for all Brightwater action alternatives:

- Treatment plant construction could begin in 2005 with site demolition and remediation.
- Heavy construction such as major earthwork excavation and concrete placement for construction of tanks and structures would likely occur in 2005–2008.
- Piping, electrical, and equipment installation would occur in 2007–2009.
- Testing, commissioning, and startup would occur in 2009–2010.
- Construction and startup of the basic treatment facilities would be completed in 2010.
- Conveyance construction would begin in 2005 and continue through 2010.
- Outfall construction would begin sometime between 2005 and 2008. It would last up to 12 months and possibly could include two summer construction seasons.

Construction times for both the treatment plant and conveyance system would typically be between 7 a.m. and 7 p.m., Monday through Friday. However, with approvals from the local jurisdictions, construction could occur up to 24 hours a day, 7 days a week, for certain activities such as tunneling and major concrete pours. Construction times for the marine outfall would be from 7 a.m. to 7 p.m. or for 24 hours daily depending upon the type of construction.

1.8 Summary of Environmental Impacts

Whether King County constructs one of the three action alternatives (Route 9–195th Street System, Route 9–228th Street System, or Unocal System) or takes no action (No Action Alternative), impacts to elements of the environment—such as air, surface water, groundwater, and transportation—would be likely to occur. The probable significant adverse environmental impacts of each of the action alternatives are summarized and compared in this section. Impacts associated with the action alternatives can be reasonably mitigated with design methods and commonly available and proven technologies. Under the No Action Alternative, King County would not implement the proposal; therefore, no mitigation of the proposal itself is proposed under the No Action Alternative.

A more comprehensive comparison of alternatives and environmental impacts is presented in Chapter 3, followed in subsequent chapters by a more detailed evaluation of the probable impacts of each alternative on the elements of the environment. The amount of analysis and discussion provided for each alternative varies, but, as required by the State Environmental Policy Act, the analysis of each alternative is detailed enough to allow a decision maker to compare the alternatives, including the proposed action (WAC 197-11-440[5][c][v]).

King County's approach to mitigation is discussed later in this chapter, and specific mitigation measures are discussed in more detail in Chapter 3 and subsequent chapters. The proposal also will be mitigated as the result of compliance with applicable local, state, and federal development regulations and permit conditions.

1.8.1 Impacts of the Route 9–195th Street Alternative

1.8.1.1 Treatment Plant

A treatment plant at the Route 9 site would have different potential overall for probable significant adverse environmental impacts in certain respects than a plant at the Unocal site for several reasons. The Route 9 site is larger and the distance between the site and the nearest homes and businesses is greater than at the Unocal site. This would make it

easier to control impacts from plant construction and operation, such as dust, noise, and odors. The larger site also would make it possible to provide greater buffers from neighboring properties and sensitive areas such as creeks and streams. In addition, the current degraded state of watercourses and the high amount of impervious surface on the Route 9 site offers King County an opportunity to improve stream and wetland habitat on the site as well as habitat in the Little Bear Creek system. Earth-related impacts at Route 9 would be less than at Unocal because the relatively flat topography at the Route 9 site, compared to the steep hillside on the Unocal site, would result in much less excavation.

Transportation impacts during construction of the Brightwater Treatment Plant at the Route 9 site would be different than at the Unocal site. The net increase in traffic on surrounding roadways is projected to be small due to the displacement of existing land uses at the Route 9 site. The additional trips from Brightwater would create minimal delays in traffic movement and circulation in the vicinity of the treatment plant site.

Two other projects—improvements to SR-9 and a Costco store—may be constructed in the vicinity of the Route 9 site at the same time as the Brightwater Treatment Plant. If this were to occur, traffic impacts, including increased congestion, would be greater than they would be with construction of Brightwater alone. King County would take steps to mitigate the impacts that would result from concurrent construction of these projects and possibly operation of a Costco store, including managing construction to lessen peak hour traffic impacts. (See Areas of Uncertainty later in this chapter.)

Transportation impacts during operation of the Brightwater Treatment Plant are expected to be minor for all alternatives. Any impacts would result from automobile and truck trips generated by treatment plant activities. At the Route 9 site, the net trips on the surrounding roadway system, compared to the No Action Alternative, would decline due to displacement of existing land uses at the Route 9 site.

A long-term goal of the Brightwater project is to possibly provide up to 54 mgd of reclaimed water to customers in the future. The long effluent line from the Route 9 site to Puget Sound could offer ample opportunities in the long term for distribution of reclaimed water along the entire corridor, whenever future customers may be identified. The estimated potential demand for reclaimed water in the future within 5 miles of the Route 9 site and the 195th Street corridor (10.1 mgd) is greater than the estimated demand within 5 miles of the Unocal site (7.4 mgd). In addition, in the long term, there would be an opportunity to provide up to 10 mgd of reclaimed water from the Route 9 site to customers in the Sammamish Valley. This opportunity would not be as cost efficient if the treatment plant were located at the Unocal site because of the greater distance from the Unocal site to the Sammamish Valley. King County is considering this potential option; if pursued at some time in the future, appropriate additional environmental review would be conducted.

1.8.1.2 Conveyance

The majority of conveyance pipelines for any of the three system alternatives would be constructed primarily in tunnels 40 feet or deeper under the ground, thus there would be no impact from the pipelines at the surface along most of the conveyance corridor. However, at certain points along the corridor, it would be necessary to establish portals—locations where workers would access the tunnel, remove soils excavated during tunnel construction, and store materials and equipment. After installation of the conveyance pipelines, permanent facilities would be constructed at some of the portals. The types of impacts that would result from constructing and operating the Brightwater conveyance system would be roughly similar for all system alternatives regardless of which one is selected; however, the impacts would occur in different geographic areas and jurisdictions and would vary in duration.

The conveyance systems for both of the Route 9 alternatives are longer and would require more primary portals than would the Unocal Alternative. The Route 9–195th Street Alternative would be 15.9 miles long and would require five primary portal siting areas; the 228th Street Alternative would be 20.3 miles long and would require seven primary portal siting areas; the Unocal conveyance corridor would be 11.6 miles long and would require four primary portal siting areas. Some types of impacts are likely to be greater for the Route 9 alternatives because of the longer conveyance corridors and greater number of portals. However, overall impacts from the Preferred Alternative (Route 9–195th Street) may be less than overall impacts from the other two action alternatives. The reason is that the properties within the portal siting areas for the Route 9–195th Street Alternative are less densely developed with homes and businesses than those of the other two action alternatives, which would result in fewer people experiencing the noise, dust, traffic disruption, and other construction impacts associated with portal construction.

Transportation impacts resulting from construction of the Brightwater conveyance system would be unavoidable, but would not be significant for any of the alternatives. Increased construction vehicle traffic would occur in the immediate vicinity of the portal siting areas and along construction access routes. This increase in traffic on surrounding roadways is likely to create minor delays in traffic movement and circulation.

Once in operation, the conveyance facilities for any of the three action alternatives would have no significant adverse environmental impacts.

1.8.1.3 Outfall

During outfall construction, impacts to marine plants and animals would occur whether construction takes place in Zone 7S for the Route 9 Alternatives or Zone 6 for the Unocal Alternative. Impacts during the construction period would include direct loss of vegetation and habitat, disruption of sediments and/or increased turbidity from sediments, mortality and temporary displacement of aquatic organisms, and potentially toxic effects in the event of construction-related spills and leaks.

Outfall construction is not expected to affect fishing activities in either Zone 7S or Zone 6. While both zones lie within the vicinity of treaty-protected "usual and accustomed" fishing/shellfishing areas for some Puget Sound area treaty tribes, King County would consult with the fisheries managers for the treaty tribes to schedule construction at times and in a manner that would not interfere with these fisheries.

Construction of the marine outfall could have impacts on people engaged in recreational activities; however, outfall construction in Zone 7S for either of the Route 9 Systems would have less impact on recreational activities than outfall construction for the Unocal site. Zone 7S lies near the King-Snohomish County line in an industrial use area where there are no designated recreational uses such as a public beach or a waterfront park like those in Zone 6 near the Unocal site. King County would also coordinate with Chevron to reduce interference with operations at the Chevron Richmond Beach Asphalt Terminal.

Once construction has been completed in either outfall zone, the discharge of effluent would occur offshore at a distance from the shoreline and at a water depth that would result in the effluent being mixed with surrounding waters and eventually transported out of Puget Sound. This mixing and transport is expected to result in minimal impacts to plants and animals during operation of the outfall.

1.8.2 Impacts of the Route 9–228th Street Alternative

1.8.2.1 Treatment Plant

A treatment plant at the Route 9 site would have a different potential for probable significant adverse environmental impacts than a plant at the Unocal site because of the large size and flat topography compared to the Unocal site and the opportunities to improve streams and wetlands. Please see the discussion of impacts from the Route 9–195th Street Alternative.

1.8.2.2 Conveyance

The types of impacts that would result from constructing and operating the Brightwater conveyance system would be similar for all system alternatives regardless of which one is selected; however, the impacts would occur in different geographic areas and jurisdictions and would vary in duration, as described for the Route 9–195th Street Alternative.

The conveyance system for the Route 9–228th Street Alternative would be longer and would require more primary portals than either of the other alternatives, as described for the Route 9–195th Street Alternative. In addition, SE/SW 228th Street is a major transportation corridor for south Snohomish County, and it would bear most of the traffic

burden during portal and tunnel construction. The longer conveyance corridor, greater number of portals, and, in particular, the route that the conveyance corridor would follow would result in the 228th Street Alternative having greater traffic impacts during conveyance construction than would either of the other two alternatives.

Once in operation, the conveyance facilities for either of the Route 9 Systems or the Unocal System would have no significant adverse environmental impacts.

1.8.2.3 Outfall

Impacts from the Route 9–228th Street Alternative during construction and operation of the marine outfall would be the same as those for the Route 9–195th Street Alternative.

1.8.3 Impacts of the Unocal Alternative

1.8.3.1 Treatment Plant

The Unocal site is in a prominent location in an active and densely populated area near downtown Edmonds. The topography and location of the Unocal site would make it difficult—but still very feasible—to meet an important goal of the Brightwater project, which is to buffer both construction and operations from neighbors as much as possible. While a treatment plant at the Unocal site would have a greater potential for construction and operational impacts than a plant at Route 9, it would also offer several opportunities to provide regional benefits. The Brightwater project could offset the cumulative impacts of two large regional facilities by co-locating on the same site as a planned multimodal transportation facility (Edmonds Crossing). Constructing a treatment plant at the Unocal site also would allow the City of Edmonds and/or the City of Lynnwood to decommission their existing wastewater treatment plants in Edmonds and their nearshore wastewater outfalls and transfer their flows to Brightwater, if they should choose to do so in the future.

A treatment plant at the Unocal site would increase the number of trips on surrounding roadways significantly. The increased traffic during construction of a treatment plant at the Unocal site would result primarily from trucks. Offsite parking with a shuttle system would be required to accommodate worker vehicles. Localized increases in traffic and delays associated with potential offsite parking would be in the vicinity of Interstate 5 and SR-99.

A lid to support the Edmonds Crossing facility could also be constructed concurrently with the treatment plant. Construction of a lid would result in an overall increase in project traffic as well as require two offsite parking areas.

Transportation impacts on roadways surrounding the Unocal site are expected to be minor during the operation of the plant.

1.8.3.2 Conveyance

The conveyance system for the Unocal Alternative is shorter and would require fewer primary portals than either of the Route 9 alternatives, as described for the Route 9–195th Street Alternative. Impacts from construction of the Unocal conveyance system are likely to be different than those that would occur from construction of the Route 9–195th Street Alternative. The reason is that the properties within two portal siting areas for the Unocal Alternative are more densely developed with homes and businesses than those of the Route 9–195th Street Alternative, which would result in more people experiencing the noise, dust, traffic disruption, and other construction impacts associated with portal construction.

Once in operation, the conveyance facilities for the Unocal System or for either of the Route 9 Systems would have no significant adverse environmental impacts.

1.8.3.3 Outfall

Impacts on plants and animals during construction and operation of the marine outfall in Zone 6 would be very similar to those in Zone 7S for the Route 9 Systems. However, recreational impacts would be greater. Outfall Zone 6 for the Unocal System includes a public beach and waterfront park in the City of Edmonds, whereas Zone 7S is in an industrial use area. Construction in Zone 6 would be disruptive to recreational users because of noise, traffic disruption, and access restrictions around the construction zone. Once in operation, however, an outfall in Zone 6 would have no adverse impacts to recreation.

King County would coordinate with the Washington State Department of Transportation to minimize impacts to scheduled ferry service during construction of the outfall in Zone 6. Once in operation, the outfall would not affect ferry service.

1.8.4 Impacts of the No Action Alternative

If King County does not construct the Brightwater Regional Wastewater Treatment System, King County would continue to implement other wastewater programs such as water conservation; use of reclaimed water; and control of combined sewer overflows, infiltration and inflow, and industrial and hazardous waste. These programs would help to maintain the wastewater system and provide additional environmental protection in some areas. However, these programs will not remove the need to construct additional treatment capacity for increasing wastewater flows from the north part of the King

County Service Area. Without Brightwater, untreated wastewater would discharge from the system in uncontrolled overflows with increasing frequency beginning in 2010. Overflows consist of wastewater that is discharged without removal of fecal material and paper, disinfection to kill pathogens, or removal of grease. Such overflows would occur with increasing frequency over time and would result in significant degradation of the environment, the potential to harm public health, and the loss of recreational opportunities.

A more comprehensive comparison of the environmental impacts of the No Action Alternative to the impacts of other alternatives is presented in Chapter 3 and subsequent chapters of this EIS and in Appendix 3-J, Evaluation of the No Action Alternative. In addition, the environmental impacts of the other components of the RWSP are evaluated in Chapters 5, 6, 7, 9, 10, and 11 of the 1998 *Final Environmental Impact Statement for the Regional Wastewater Services Plan* (King County, 1998), which is incorporated by reference into this EIS. (Please see the Fact Sheet at the beginning of this document.)

1.9 Mitigation Approach and Summary

The Brightwater System is being proposed to protect public health and the environment by removing pollutants from wastewater. The treatment of the wastewater will result in cleaner water being discharged to Puget Sound, reclaimed water that could replace the use of potable water for irrigation and industrial purposes in future years, and biosolids that provide soil amendments for agricultural and forestry lands. These products all will benefit the environment. Nevertheless, given the magnitude of the project and the length of the construction period, impacts to the environment and to the community are likely to occur.

The State Environmental Policy Act (SEPA) requires proponents of a project to seek ways to mitigate the impacts of their proposal. SEPA (WAC 197-11-768) defines mitigation as taking any or all of the following steps:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing, enhancing, or providing substitute resources or environments.
- Monitoring the impact and taking appropriate corrective measures.

From the beginning of the siting process, King County has sought ways to mitigate the probable impacts of the Brightwater proposal. Potential sites were screened and selected using criteria that eliminated from consideration those sites where construction of wastewater facilities—treatment plant, conveyance, and outfall—were likely to have the greatest significant adverse impacts to the community or to sensitive areas. For example, portal siting areas were screened to select, when possible, those with the least amount of existing development in order to minimize impacts to residential communities and businesses, and outfall zones were selected that would provide the greatest degree of mixing of effluent with surrounding waters.

Facility designs are being continuously refined to avoid or minimize impacts. Since publication of the Draft EIS, the number of primary portals has been reduced and conveyance alignments have been revised to follow public rights-of-way as much as possible in order to minimize impacts to private property and communities. In addition, tunneling has been selected as the preferred construction method for conveyance pipelines in order to avoid surface disruption and impacts to streams and wetlands.

King County has evaluated many different treatment technologies and construction methods and is proposing those that will minimize impacts. For example, membrane bioreactors would be used for secondary treatment of wastewater to produce a higher quality of effluent, wastewater treatment facilities would be enclosed to contain odors, conveyance pipelines would be double-lined when they pass through sensitive areas, and vibratory pile drivers are proposed for use at the Unocal site to reduce noise levels during construction.

King County would use low impact development (LID) methods to minimize site development impacts, including measures to slow and retain runoff from the site, thus reducing the amount of stormwater generated by the proposal. LID measures are likely to include minimizing the building, parking, and roadway footprints; using porous materials for roads and parking areas; collecting roof runoff and providing areas for re-infiltration; amending soil in landscaped areas; landscaping with native plants; and, where practicable, incorporating vegetated roofs into treatment plant design. If the treatment plant is built at the Route 9 site, King County would restore and enhance creeks, wetlands, and upland habitat on the site. This would include daylighting portions of streams, rerouting portions of streams, and replacing culverts, which would result in substantial water quality and habitat improvement over the existing conditions on the site. This in turn would reduce peak flows and improve the quality of water being discharged to Little Bear Creek.

Mitigation for short-term impacts during construction also has been integrated into project design. For example, transportation management approaches such as busing construction workers from off-site parking lots (Unocal) and managing timing of construction truck traffic to coordinate with other nearby projects (Route 9) are proposed to ensure that traffic near project sites continues to circulate efficiently and on-street parking supply is not affected. Temporary intersection improvements also are proposed to mitigate impacts to local traffic circulation. Best Management Practices, or BMPs, are incorporated to control erosion from construction sites and potential sedimentation of

nearby water bodies as well as to mitigate impacts from noise, dust, and emissions associated with construction activities.

As the proposal moves from environmental analysis to final design and permitting, site-specific impacts that will need to be mitigated are likely to be identified. Mitigation may range from ensuring access to public parks and beaches during construction to compensation for impacts to the community, such as providing a Community-Oriented Building at either the Route 9 or Unocal site. Mitigation also would include working with the community to consider neighborhood attributes that could be adversely affected by the project and to provide architectural and landscape designs for both the treatment plant and portal facilities to ensure that the facilities are compatible with the surrounding neighborhood.

During construction and operation, King County would conduct many different kinds of monitoring. This would include, for example, monitoring stormwater discharges and groundwater levels during construction and monitoring the effluent and the offshore water column, marine sediments, and nearshore environment in the vicinity of the outfall during operation. If monitoring indicates that unacceptable adverse impacts are occurring, steps would be taken to reduce or eliminate the impact.

Summaries of impacts and mitigation measures to address impacts on each element of the environment analyzed in this EIS are provided in tables in Chapters 4 through 17, as noted below:

Element of the environment	Chapter Number	Table Number
Earth	4	4-15
Air	5	5-18
Water resources	6	6-25
Plants, Animals and Wetlands	7	7-28
Energy and Natural Resources	8	8-10
Environmental Health	9	9-2
Noise and Vibration	10	10-15
Land and Shoreline Use	11	11-8
Aesthetics	12	12-3
Light and Glare	13	13-9
Recreation	14	14-7
Cultural Resources	15	15-6
Transportation	16	16-69
Public Services and Utilities	17	17-6

1.10 Areas of Uncertainty and Issues to be Resolved

The Brightwater proposal encompasses many elements of project design—a treatment plant, many miles of conveyance lines, and a deepwater marine outfall; the project extends over a wide geographic area—from east of I-405 in north King County and south Snohomish County to Puget Sound; and it will be designed and constructed over a period of years—from now until 2040 or later. Given the magnitude and complexity of the project, many project details will continue to be refined as the proposal moves through the final design and permitting process. This section discusses issues that have a bearing on the design or operation of the Brightwater facilities but are not fully resolved at this time.

1.10.1 Sizing, Phasing, and Designing Brightwater

1.10.1.1 Population and Flow Analysis

The King County Regional Wastewater Services Plan (RWSP), adopted in 1999, used regional population and employment forecasts and flow projections to estimate the future need for wastewater treatment and conveyance capacity through 2040 in the King County Service Area, including the sizing and timing of new facilities such as Brightwater. King County updated the RWSP population and employment forecasts and analyzed the projected flows after publication of the Brightwater Draft EIS in order to ensure that facilities are being properly sized and have sufficient capacity available when needed. If facilities are built too soon, money will be spent sooner than necessary; if facilities are built too late, the risk of wastewater overflows in the system increases and our region's ability to provide wastewater capacity necessary for the growth forecast in local comprehensive plans is seriously compromised.

The updated forecasts were based on 2000 census data provided by the Puget Sound Regional Council; they were compared to the earlier forecasts used in the RWSP, which were based on 1990 census data. The updated analysis supports the conclusions that the King County wastewater system will exceed capacity in the Brightwater Service Area no later than 2010 and that it is appropriate to size the Brightwater System to treat 36 mgd AWWF initially, with a later expansion to 54 mgd AWWF, and a peak flow of 170 mgd. Details of the updated analysis are provided in Chapter 2 and Appendix 2-A, Population and Flow Analysis.

King County will continue to periodically update population and employment forecasts and flow projections and model future wastewater conveyance and treatment demand to make sure that the sizing and timing of facilities such as Brightwater are appropriate in the future. Depending on how growth in various parts of the wastewater service area

actually occurs over the planning period, some projects in the RWSP, including elements of the Brightwater System, may be built later while others may be built sooner to provide adequate facilities and services when needed and to maximize the use of the existing system.

1.10.1.2 Effectiveness of Infiltration and Inflow Control

Since the 1950s, stormwater and wastewater systems have been built to carry stormwater and wastewater flows in separate pipes. Today's wastewater conveyance pipes are not intended to carry large amounts of groundwater or stormwater. Nevertheless, a substantial amount of groundwater and stormwater enters the pipes through infiltration and inflow (I/I), and the majority of I/I enters the local systems. This requires pipelines and treatment plants to be built large enough to accommodate the high flows that sometimes result from I/I even though this maximum capacity is not needed all the time.

King County is undertaking a comprehensive Regional Infiltration and Inflow Control Program (see Chapter 2) to identify sources and current levels of I/I into local sewer systems, determine how much it would cost to reduce I/I, and develop a plan for the long-term control of I/I into the regional system. The program began with an extensive flow-monitoring program during the wet seasons in 2000-2002. It is continuing with 10 pilot projects using different technologies to control I/I in 2003-2004. The technologies will be evaluated, and, if any of the technologies prove to be successful and cost effective in controlling I/I, then King County will use the successful technologies to develop a large-scale I/I control program aimed at reducing I/I by at least 30 percent, as called for in the RWSP.

An observation by some agencies and citizens is that if King County were to take steps to control I/I to a sufficient level, perhaps a new wastewater treatment system would not be necessary, or, at the very least, a smaller system could be built, or the construction of a new system could be delayed. Many cities have tried but have not been successful in removing I/I from their wastewater systems, and they have found that attempts to remove I/I can cost more than building new facilities. Successful programs have taken many years to see benefits from I/I reduction efforts. While I/I control holds some promise for potentially delaying the need for increasing the capacity of the wastewater treatment system in the future, it is too early to state confidently that I/I can be controlled sufficiently to reduce storm-induced flows to the regional wastewater treatment system to a significant degree. Considering the experience of other utilities' efforts to implement an effective, large-scale program to control I/I, there is not sufficient time before 2010 to test, evaluate, design, and implement a large-scale I/I control program that would ensure that system overflows would not occur.

If King County's I/I control program proves to be successful in controlling I/I to a significant degree, it is possible that the planned expansion of the Brightwater System to 54 mgd in 2040 or other planned improvements to the King County wastewater system could be delayed. However, studies have shown that even if the 2040 Brightwater

expansion and other improvements could be delayed, I/I control will not eliminate the need for the Brightwater System to provide an additional 36 mgd of capacity in the King County wastewater treatment system by 2010.

1.10.1.3 Cumulative Impacts of Route 9 Treatment Plant, SR-9 Roadway Improvements, and Costco Store

Construction of the Brightwater Treatment Plant is proposed to begin in 2005, with the peak construction period occurring in 2007. Construction of other proposed projects in the vicinity of the Route 9 site—improvements to SR-9 and a Costco store—also may occur during this time. The impacts to traffic conditions along SR-9 during Brightwater construction would vary depending upon the timing of these other projects.

The Washington State Department of Transportation (WSDOT) is planning to make capacity improvements to SR-9 and complete the section from SR-522 to SR-524 by November 2006. Improvements would include a new signal at the intersection of SR-9 and SR-522 westbound ramps (south of the Route 9 site), a new through lane in each direction and a center two-way left-turn lane between SR-522 and 228th Street SE (adjacent to the Route 9 site), and one additional through lane in each direction between 228th Street SE and SR-524 (Maltby Road) (adjacent to the northern part of the Route 9 site).

In addition, earlier in 2003, the Costco Wholesale Corporation of Issaquah was considering constructing a Costco store at the southwest corner of the SR-9/SR-522 intersection. While the project was on hold at the time the Brightwater EIS was being prepared, the EIS considers the traffic impacts that would occur if construction and operation of a Costco store or another large retail store were to occur in the area at the same time as Brightwater.

If the SR-9 improvements and/or the Costco store were to be constructed during the same time as the Brightwater Treatment Plant at Route 9, traffic impacts would be greater than they would be with construction of Brightwater alone. This is of particular concern because there are limited alternatives for detour routes in the vicinity of the Route 9 site that drivers could use to avoid construction. This likely would result in increased delays and congestion and an extension of the peak traffic period.

Projecting with precision the impacts that would result from construction and operation of the SR-9 capacity improvements and/or a Costco store during peak Brightwater construction is not possible at this time because the exact timing for each of these projects will not be known until later in design and permitting. To analyze the worst case scenario, the transportation analysis in Chapter 16 of this EIS assumes two potential scenarios:

- SR-9 capacity improvements are delayed beyond the planned November 2006 completion date, and peak construction occurs in 2007 at the same time as the

peak construction period for the Brightwater Treatment Plant; Costco is built at the same time.

- SR-9 peak construction occurs in 2007 at the same time as the peak construction period for the Brightwater Treatment Plant, and Costco is open for business. This scenario presents the greatest cumulative traffic impacts.

The transportation analysis in Chapter 16 describes a variety of measures that King County could take to mitigate impacts during Brightwater construction. These include managing the project in ways that avoid having an impact on peak-hour traffic during construction of SR-9 improvements. If construction of SR-9 improvements proceeds on its present schedule and is completed in 2006, cumulative impacts would be somewhat less severe that presented in Chapter 16. Likewise, if construction of the Costco store is delayed, impacts would be less severe.

Specific impacts and appropriate mitigation measures to address them would be defined more precisely at the time of permitting, but Chapter 16 characterizes the most severe case that would require mitigation.

1.10.1.4 Design Refinements

The Brightwater Regional Wastewater Treatment System is currently in the preliminary design phase of development. During the final design and permitting process, the design of the system will be refined and enhanced in an effort to increase engineering efficiency, increase cost effectiveness, and/or further reduce environmental impacts during construction and/or operation of the system.

The site plans shown in this EIS represent the scale of facilities that would be built for either the Route 9 or Unocal Systems and the manner in which facilities for each system would be placed in relation to one another. This level of design allows a clear comparison of the impacts of constructing a treatment plant at either of the two sites, locating conveyance pipelines, and constructing the outfall. However, the specific design and location of facilities may change as the project moves into final design.

For example, the proposed tunnel alignments, profiles, portal depths, drive lengths between primary portals, diameters, and lining systems were all determined based on information that was available while the Draft and Final EIS were being prepared. However, if, during final design or construction, engineers and/or workers encounter groundwater conditions, pressures, volumes of water, and/or disposal conditions that differ substantially from what is expected, design changes could be made.

Several refinements to the proposal already have been made since the Draft EIS was issued in November 2002 as part of the effort to mitigate the impacts of the proposal. These refinements, which are evaluated in the Final EIS, include reducing the number of primary portal siting areas along the conveyance route, realigning the eastern portion of the conveyance route, and using membrane bioreactor technology for secondary

treatment of the wastewater. (See the summary discussion earlier in this chapter as well as a more detailed description of alternatives in Chapter 3.) As the process continues, if the need for additional design changes is identified, the changes would be evaluated and appropriate environmental review would be conducted at that time.

1.10.2 Route 9 Site Design

1.10.2.1 Woodinville North Business Park

The Woodinville North Business Park lies near the center of the Route 9 site. Covenants currently restrict the types of uses and development that can take place within the Business Park. The Business Park includes five lots covering approximately 27.8 acres within the Urban Growth Area. King County now owns Lots 2, 3, 4, and 5, and is evaluating the feasibility of acquiring Lot 1.

The current site plan for the Brightwater Treatment Plant encompasses the entire Business Park and assumes that King County would acquire ownership of all five lots. Treatment plant facilities that would be constructed on these lots include MBR and reclaimed water facilities, an electrical substation, secondary clarifiers, stormwater ponds, and a stormwater canal.

Woodinville North Joint Venture developed the Business Park and currently owns Lot 1. It leases the building on the site to StockPot, Inc., a subsidiary of Campbell Soup Company. Lots 2 and 5 are vacant. There are no buildings on Lot 3, but some site work has been done and a parking area has been constructed. A light industrial building has been constructed on Lot 4, and Quality Business Systems, an office equipment and service provider, leases part of the building.

If King County acquires all five lots, then the Business Park covenants would not affect the development of the property. However, if King County acquires only some of the lots, the covenants would still be in effect and could restrict King County's use of the property. King County then would review the Brightwater site plan and develop the acquired lots consistent with any legal effect that the covenants may have.

1.10.2.2 Influent Pump Station

King County is evaluating the possibility of constructing the Route 9 influent pump station offsite in Portal Siting Area 41 in an effort to further mitigate the proposal. An influent pump station on the Route 9 site would require a very deep portal excavation; constructing it in Portal Siting Area 41 would require a shallower shaft, and, therefore, the depth of the excavation could be reduced. This could result in less cost and less impact to resources such as groundwater. The Final EIS contains a qualitative discussion

of the relative impacts to be expected from this potential change in the location and design of the influent pump station. The decision on the final location for the influent pump station is likely to be made at the time of, or shortly after, the decision on the treatment plant site and conveyance alternative and before final design and permitting.

1.10.3 Unocal Site Design

1.10.3.1 Treating Edmonds and Lynnwood Wastewater

This EIS evaluates a design for the Unocal System that would allow Brightwater to treat wastewater flows from treatment plants operated by the Cities of Edmonds and Lynnwood. However, King County is not proposing to transfer these flows to Brightwater. Any decision on whether or not to decommission the plants and transfer flows to Brightwater for treatment and discharge would be made by the agencies that own the plants, the Cities of Edmonds and Lynnwood, in consultation with King County.

The Edmonds and Lynnwood wastewater treatment plants are located in the City of Edmonds. The Lynnwood treatment plant is located in the far north end of Edmonds. The Edmonds treatment plant is located about one half mile northwest of the Unocal site in downtown Edmonds. King County currently has a flow transfer agreement with the City of Edmonds; however, Edmonds is not part of the King County Service Area, nor is Lynnwood.

A regional treatment plant located at the Unocal site would be constructed in at least two phases, with the initial phase providing capacity to treat up to 36 mgd AWWF. Later, in about 2040, capacity would be increased to 54 mgd AWWF by adding treatment components. Should Edmonds and/or Lynnwood decide, either now or at a later date, to close their plants and transfer the flows to the regional plant, those transfers could be accommodated by expanding Brightwater to 54 mgd AWWF sooner and by increasing the ultimate plant capacity to up to 72 mgd AWWF if both Edmonds and Lynnwood transferred their flows.

This EIS evaluates the impacts of constructing and operating a 72-mgd treatment plant at the Unocal site and an outfall sized to convey and discharge the flows from Edmonds and Lynnwood in addition to those from the rest of the Brightwater Service Area. Neither Edmonds nor Lynnwood thus far has formally expressed an interest in treating their flows at the Brightwater Treatment Plant; however, if either one should propose flow transfers, appropriate environmental review would be required at that time to evaluate the impacts of installing pipelines to convey the flows to the Brightwater Treatment System.

1.10.3.2 Structural Lid to Accommodate Multimodal Facility

This EIS evaluates a design that would allow the Brightwater Treatment Plant and a proposed multimodal transportation facility (the Edmonds Crossing) to co-locate on the northern portion of the Unocal site. In order for the Brightwater Treatment Plant to be constructed in a manner that would preserve the opportunity to co-locate these facilities, a structural "lid" would need to be built over the treatment plant to accommodate the multimodal transportation facility. At this time, no decision has been made on whether to construct a lid for this purpose; however, construction of a lid is feasible, and the significant impacts of constructing a lid at the Unocal site are evaluated in this EIS.

The proposed Edmonds Crossing has been referred to as a "multimodal" facility because it would serve several modes of travel—ferry, bus, and rail. The Edmonds ferry terminal would move from its current location in downtown Edmonds to the Unocal site, and it would be developed in conjunction with another proposal—the Edmonds Sounder commuter railway station and transit center, being developed by Sound Transit. Funding for the Edmonds Crossing proposal includes federal and state grants for planning, design, and property acquisition. Approximately $18.5 million of the estimated project cost of $162.3 million had been obtained through state and federal grants by mid-2003.

The agencies proposing construction of the Edmonds Crossing—the U.S. Department of Transportation, Federal Highway Administration; the Washington State Department of Transportation; and the City of Edmonds—have issued a Draft Environmental Impact Statement (EIS) on the Edmonds Crossing proposal (Federal Highway Administration (FHWA) et al., 1998), pursuant to both the National and State Environmental Policy Acts. The impacts of the proposal are evaluated in the Edmonds Crossing Draft EIS in the Summary, Section 4: Environmental Consequences, and Section 5: Section 4(f) Evaluation. The Draft EIS is incorporated by reference into the Brightwater EIS. (Documents incorporated by reference and the locations where they can be viewed are listed in the Fact Sheet at the beginning of this document.) At the time of writing of the Brightwater Final EIS, a Final EIS for the Edmonds Crossing project had not been issued. Following issuance of the Edmonds Crossing Final EIS, the Federal Highway Administration would issue a record of decision on the proposal. Because the funds needed to construct Edmonds Crossing have not been authorized, it is presently not certain if, or when, this project would be constructed. Nonetheless, the significant short-term and long-term impacts of constructing a lid over a treatment plant at the Unocal site are evaluated in relevant sections of this EIS.

If the Unocal site is selected for the Brightwater Treatment Plant, it is likely that construction of the plant would begin at the site before a final design is completed for the multimodal facility. Preliminary engineering for the treatment plant has been done with the multimodal transportation facility in mind, including provisions for a structural lid. A decision on whether or not to construct a lid over the treatment plant would have to be made during the final design of Brightwater. The lid is not part of the primary Unocal alternative evaluated in this EIS; however, the probable significant adverse environmental impacts of constructing the lid and the related facility configuration are evaluated in this EIS as a sub-alternative for the Unocal site. In addition, the cumulative

traffic impacts from operating a multimodal facility and a treatment plant at the Unocal site are evaluated.

1.10.3.3 Proposed Multifamily Development

In late 2001, the King County Council identified the possibility that the proposed Brightwater Treatment Plant could be located at the Unocal site. The need to site a new regional treatment plant in north King County or south Snohomish County had been called for earlier in the Regional Wastewater Services Plan, adopted in 1999. As King County has evaluated potential treatment plant sites and system designs, the City of Edmonds has been kept closely apprised of and has been actively involved in the siting process (see discussions of the siting process earlier in this chapter and in Chapter 2). This includes being informed of detailed design work and environmental analysis of the impacts of constructing a treatment plant at the Unocal site.

In 2001, the City of Edmonds adopted new zoning regulations that would allow the construction of multifamily development on the Unocal site. King County appealed the adoption of these regulations to the Central Puget Sound Growth Management Hearings Board (GMA Board). In a decision dated September 12, 2002, the GMA Board determined that King County's appeal did not need to be brought at that time; rather the appeal could await the possible future selection of the Unocal site for a Brightwater wastewater treatment plant.

In late 2002, Triad Development, Inc., submitted a permit application to the City of Edmonds to construct a 295-unit multifamily development, called Point Edwards, on the Unocal site. The City of Edmonds issued a SEPA Mitigated Determination of Non-Significance on the proposal, and the permit application is pending. The developer anticipates beginning construction of the project in 2003. It is anticipated that the King County Executive will select a final Brightwater System by approximately December 2003. In the event that the Executive selects the Unocal System, King County will take those actions necessary to acquire the Unocal site, including the land upon which the developer proposes to construct Point Edwards.

1.10.4 Conveyance Design and Construction

1.10.4.1 Use of Secondary Portal Siting Areas

Conveyance pipelines for any of the three system alternatives would be constructed primarily in tunnels 40 feet or deeper under the ground, and thus there would be no impact from the tunnels at the surface along most of the conveyance corridor. However, at certain points along the conveyance corridor, it would be necessary to establish locations where portals would be constructed for workers to access the tunnel, launch or

retrieve tunnel boring machines, remove soils excavated during tunnel construction, and store materials and equipment.

The Draft EIS indicated that construction would take place at all of the identified portal siting areas along the conveyance corridor for the selected system. However, since the Draft EIS was published, King County has done additional engineering analysis and determined that fewer portal siting areas are likely to be needed. Those that clearly would be needed are designated in the Final EIS as primary portal siting areas; those that are likely to not be needed, or needed for less intense uses, are designated as secondary portal siting areas.

While it is presently anticipated that secondary portal siting areas will not be needed to construct the conveyance system, it is possible that during final design, it will be determined that portal siting areas now designated as secondary turn out to be needed for limited purposes such as to provide ventilation or to support construction activities. The Final EIS provides more detailed information and analysis for primary portal siting areas than for secondary ones. If additional information is needed for secondary portal siting areas during the permitting process, King County will complete a site selection process for those secondary portals that might be required and provide any additional information needed at that time.

1.10.4.2 Acreage Needed for Portal Construction

A minimum of 1 to 2 acres of land would be needed for each of the portals along the conveyance route for the selected alternative. An area of 1 to 2 acres is generally large enough to accommodate construction machinery such as cranes, trucks, and tunnel boring machines; construction activity such as grading for site preparation, drilling, excavation, and soil removal; parking for workers; and/or permanent conveyance facilities, when construction is finished, such as underground vaults, odor control facilities, or dechlorination facilities. However, King County would prefer to have larger areas to provide more working space, larger buffers from surrounding land uses, and mitigation opportunities.

Depending on the location of each portal siting area and the parcels that comprise each area, some primary portals could be larger than 1 to 2 acres. King County may purchase or lease a larger area for several reasons:

- While King County may need only 1 to 2 acres of a larger parcel, the County cannot purchase or lease only part of a parcel and leave an “uneconomical remnant.”
- King County would work with property owners to accommodate their long-term plans for use of a parcel of land, which could result in acquisition of more than 1 to 2 acres.

- Acquiring a larger parcel or adjacent parcels could provide opportunities to mitigate impacts of the proposal, such as working with local jurisdictions to provide park facilities when portal construction is finished.

The exact location and size of each portal would be determined during preliminary design using a criteria-based screening process.

1.10.4.3 Effect of Additional Geotechnical Borings on Design and Construction

King County has completed at least one geotechnical boring within each of the primary portal siting areas along the Route 9–195th Street corridor. The data gathered from the initial borings are sufficient to determine the type of construction that would be used within each portal siting area and to evaluate the probable significant adverse environmental impacts of the construction. Additional borings would be completed at selected portal sites after the Executive has made a final decision on the proposed alternative, after the specific location for portal construction within each portal siting area has been identified, and after access to portal sites has been provided. The additional borings would help to determine specific geotechnical conditions at the precise location where the portal would be constructed. This information would be used to determine final design requirements such as specific portal dimensions, thickness of the concrete walls, design of tunnel lining, type and extent of ground improvements, and types of foundations for permanent facilities. In addition, it would be used to determine specific requirements for tunnel boring machines and vertical alignments to lessen impacts to streams, aquifers, and wells. The additional borings would also help in selecting the most appropriate mitigation measures to address impacts at specific locations.

1.10.5 Level of Contamination

Both alternative treatment plant sites—Route 9 and Unocal—as well as some portal siting areas and conveyance corridors are located on or near sites that previously have been used for industrial activities. The industrial activities have resulted in known or suspected contamination of soils and groundwater. It is assumed that some soil and groundwater contamination would be encountered during the excavations required for construction of the treatment plant, conveyance tunnels, and outfall. However, the extent of contamination is uncertain.

Activities on the Route 9 site now or in the past have included automotive parts storage, wrecking yards, maintenance shops, a landscaping business, fiberglass boat manufacturing, utility equipment storage, and storage of petroleum products and hazardous chemicals in tanks, drums, and underground storage tanks. Environmental evaluations conducted in late 2002 and early 2003 indicate that most of the Route 9 properties have the potential to release contaminants to the environment. One property is on the Washington State Department of Ecology (Ecology) Model Toxic Control Act

(MTCA) Confirmed and Suspected Contaminated Sites List, as of May 2001. It has been ranked as a 5, the lowest level of risk, and it is awaiting remedial action. Some of the other parcels already have undergone remediation. If Brightwater is built at the Route 9 site, King County would conduct further investigations prior to construction to confirm the type and extent of contamination present and determine the appropriate method of remediation.

The upper yard on the Unocal site was previously used for storing, blending, and distributing various petroleum products, including gasoline, diesel fuel, and bunker fuel, and the lower yard was used for asphalt production. A small pier that extends into Puget Sound at the southwest corner of the site was formerly used to unload oil through pipelines from ships to the Unocal facility. The many years of industrial use on the site have resulted in soil and groundwater contamination. The Unocal site is on the Ecology MTCA Confirmed and Suspected Contaminated Sites List. It has received a ranking of 1, the highest ranking for cleanup. Unocal is cleaning up the site under an Agreed Order with Ecology. Cleanup of the upper yard was completed in March 2003. It is not known what extent of soil removal or cleanup measures Ecology may require for the lower yard; final cleanup of the lower yard is projected to begin in summer 2005.

Completion of the cleanup at the Unocal site could follow two scenarios. Unocal could clean up all known contamination and satisfy Ecology's requirements before selling the site to King County, or King County could purchase the site and take over responsibility for the cleanup. A decision has not yet been made regarding the timing and responsibility for completing the site cleanup.

Geotechnical explorations were conducted in 2001 and 2002 at several points along the conveyance corridors and in portal siting areas to determine if contaminated soils or sediments are present. None were identified; however, contaminated soils or sediments may be present in untested areas, particularly in those areas with a history of commercial or industrial activity. A review of federal databases revealed no known substantially contaminated sites, such as Superfund sites, along any of the corridors. However, several sites near corridors and portal siting areas are on the Ecology MTCA list of suspected and confirmed contamination sites The sites have either been cleaned up, are awaiting assessment of site contamination, or will be undergoing remedial action with oversight by Ecology.

Contaminated sediments could be encountered during both on-land and in-water excavation in both outfall Zone 6 and Zone 7S because of their proximity to past and present industrial facilities and stormwater outfalls. Portal Siting Area 19 (adjacent to Zone 7S) is of special interest because it encompasses portions of the Chevron property at Point Wells on Puget Sound, and the conveyance corridors for both of the Route 9 Systems would pass through the Chevron property. This property has documented contamination associated with leakage from bulk fuel storage operations. The contaminants are hydrocarbons—gasoline, diesel, and motor oil. In areas of known or suspected contamination, further evaluation would be performed to identify the limits of contamination prior to outfall construction. In areas known to be contaminated, monitoring would occur during construction, and excavated sediments would be handled

and disposed of according to a contaminated soils handling plan. The plan would be prepared in accordance with the Puget Sound Dredged Disposal Analysis program, which is administered jointly by the Washington State Department of Ecology, the Washington State Department of Natural Resources, and the U. S. Army Corps of Engineers.

1.10.6 Market for Reclaimed Water

The Brightwater Treatment Plant, whether it is located at the Route 9 site or at the Unocal site, would be constructed to produce initially up to 5 mgd of high quality reclaimed water. The initial 5 mgd would be used to serve needs on the treatment plant site, including landscape irrigation and process water. King County also has identified potential customers for reclaimed water within 5 miles of each treatment plant site and within 5 miles of the Route 9 effluent corridor. King County evaluated the feasibility of providing these potential customers with reclaimed water (see Appendix 3-D, Reclaimed Water Technology Review and Evaluation of Potential Water Reuse Opportunities). King County conducted a programmatic environmental review of providing reclaimed water in the Regional Wastewater Services Plan EIS, which is incorporated by reference (please see the Fact Sheet at the front of this document). Potential future customers may include golf courses, plant nurseries, cemeteries, and an educational campus. As the market demand for reclaimed water increases, the Brightwater Treatment Plant possibly could provide increasing amounts of reclaimed water, up to 54 mgd, in the future.

Reclaimed water is a valuable alternative to potable water and can be used for many nonconsumptive uses, such as irrigation, heating, and cooling. As potable water supplies are stretched more and more by the demands of our growing region, recycling reclaimed water can reduce the demands on potable water supplies with lower environmental costs than developing new sources. Furthermore, because much of the region's water comes from mountain streams and reservoirs in the Cedar River, Tolt River, Green River, and other watersheds, using reclaimed water allows more water to be left in those streams to provide better habitat for fish and wildlife, including migrating salmon.

King County anticipates that maintaining an adequate supply of potable water will become more difficult over the coming years and that the demand for reclaimed water will increase. Thus the Brightwater System would be designed so that increasing volumes of wastewater could be treated to reclaimed water standards in the future and the necessary distribution pipelines could be installed to meet the demand. The use of membrane bioreactors to treat wastewater at the Brightwater Treatment Plant would produce, with only minimal additional treatment, an effluent that meets reclaimed water standards. This would reduce the cost and make reclaimed water more readily available. As 2010 approaches, King County will increase efforts to market reclaimed water, particularly in the Sammamish Valley where the potential demand for irrigation water could be as much as 10 mgd. The timing and ultimate extent of the future market for reclaimed water will depend on many factors, including how cost effective it is for potential customers to pay for reclaimed water compared to how cost effective it is to

continue using potable water. Any future decision to provide reclaimed water offsite would be subject to additional analysis and appropriate environmental review.

1.10.7 Changes in Standards for Treating Wastewater

King County treats and discharges wastewater according to permits issued under the National Pollutant Discharge Elimination System (NPDES). NPDES permits typically place limits on the quantity and concentration of pollutants that may be discharged into state waters. Brightwater will meet all water quality standards in effect at the time of permit application.

The National Pollutant Discharge Elimination System is part of the federal Clean Water Act. The U.S. Environmental Protection Agency (EPA) administers the Clean Water Act and has delegated NPDES permitting authority to the Washington State Department of Ecology. EPA has established federal water quality criteria under the Clean Water Act, and Ecology has developed state water quality standards, which must be at least as stringent as the national criteria. The purpose of the Water Quality Standards for Surface Waters of the State of Washington (Water Quality Standards) (WAC 173-201A) is to preserve the beneficial uses of state waterbodies for people and wildlife. These standards are periodically reviewed and updated through a public process.

In early 2003, Ecology adopted revised Water Quality Standards in order to address new state and federal requirements for the protection of threatened and endangered species and to reflect the latest scientific information. The revised standards include new criteria for temperature, bacteria, and ammonia; new criteria to protect bull trout; and new language on how to prevent degradation of water quality. The revised standards replace the previously "class-based" system with a "use-based" system for designating beneficial uses of fresh waters.

The revised standards have been submitted to EPA for approval, but they cannot be applied to actions taken by Ecology to administer a federal law (such as issuing an NPDES permit) until they are approved by EPA. EPA will review the revised standards adopted by Ecology and determine whether they comply with the Clean Water Act and the Endangered Species Act. If approved by EPA, several of the newly revised Water Quality Standards could affect future NPDES permit conditions for Brightwater:

- Enterococci bacteria, rather than fecal coliform, would be used to indicate the presence of pathogens in marine waters used primarily for recreational purposes in order to protect the health of people who play in state waters. This could increase requirements for monitoring water quality in some areas. (Fecal coliform would continue to be used to indicate pathogens in marine waters not used primarily for recreational purposes.)
- Procedures for implementing water quality antidegradation policies would be more rigorous.

- Temperature standards would provide additional protection of fish.
- Agencies would be allowed to reduce existing discharges from other sources in order to reduce the total level of pollution in a water body. By reducing total pollutants to a level within the threshold allowed, an agency could "make room" for other new or expanded discharges.

The NPDES permit for Brightwater will be subject to the water quality standards that are in effect and applicable at the time of permit application. In addition, NPDES permits are issued for a period of 5 years, after which permits are reviewed and revised as necessary to protect water quality. Thus Brightwater would be subject to any new regulations that come into effect between the time the initial NPDES permit is issued and every 5 years thereafter when it is renewed.

The Regional Wastewater Services Plan provides the flexibility for such changes in regulation to occur. The existing South and West Point Treatment Plants have space reserved onsite to allow for future process changes to be implemented so that Water Quality Standards will be met. King County's Vashon Treatment Plant currently is close to capacity. A new facility is being constructed on Vashon Island that will have the capability to meet all standards consistently. Brightwater also will have space reserved to meet more stringent requirements in the future, if needed.

1.10.8 Changes in Wastewater Treatment Methods and Technology

Over the past century, methods and technologies for managing and treating wastewater have developed and changed radically. These changes have resulted in improved efficiencies and discharge quality. In early days, public health was protected somewhat by collecting and discharging untreated wastewater to rivers and bays in order to keep it away from streets and human contact. Primary treatment, which uses gravity to separate solids followed by disinfection of effluent to kill harmful bacteria prior to discharge, represented a large stride toward improved public health protection and greater environmental protection for receiving waters. Secondary treatment, now required at most U.S. treatment plants including King County's regional plants, increases removal of pollutants in wastewater, providing increased protection for the environment.

There are many different technologies that provide secondary treatment of wastewater. King County has evaluated many of these to determine which would be best for the new regional plant. Those evaluated included biological secondary treatment, currently used at King County's other regional plants, as well as other treatment technologies that provide enhanced effluent quality, require fewer chemicals to be stored and used in the treatment process, and cost less. The evaluation of technologies has been a continuous process. Subsequent to publication of the Brightwater Draft EIS, King County determined that membrane bioreactors (MBRs) would produce a higher quality effluent than other technologies, thus King County is proposing to use MBRs to provide secondary

treatment. MBR technology is a biological process that uses membranes to separate the liquid from the solids rather than using clarifiers. Clarifiers are a more conventional technology that uses tanks where the solids settle out of the liquid. MBR is rated highly for several reasons:

- It produces a high quality secondary effluent that will reduce pollutant loadings to Puget Sound compared to conventional technologies.
- It produces reclaimed water that requires no further treatment—other than disinfection—prior to reuse.
- Membranes require a smaller footprint than other technologies, such as clarifiers.

However, MBR is a more complex system. It requires more energy to operate and potentially higher staffing levels to maintain the system. If the cost of power increases substantially, or if the system becomes too difficult to maintain properly, the cost of operating MBRs could increase to the point where it becomes more economical and efficient to use other more conventional processes. Thus, King County would reserve space on the Brightwater site to allow for construction of conventional secondary clarifiers in the future, if necessary.

King County also evaluated key technologies for odor control and solids processing. The technologies being proposed for odor control include enclosing facilities and tanks to contain odors and treating air from all process facilities. Odor release would be prevented by a combination of processes: (1) chemically treating and transforming odor-causing chemicals in the influent as it enters the plant to remove offensive odors, and (2) collecting and treating all air with four stages of treatment, consisting of three-stages of chemical scrubbing followed by carbon polishing, prior to release of the treated air into the atmosphere.

King County evaluated options for enhancing the quality of biosolids and determined that the technology best suited to the conditions at the Brightwater Treatment Plant and to the intended end uses would be conventional anaerobic digestion. Conventional anaerobic digestion, similar to the technology used at the West Point and South Treatment Plants, produces Class B biosolids. Class B biosolids can be used for composting and for application to agricultural and forestry lands. The Brightwater plant would be designed with enough flexibility to allow for modifying facilities in the future to provide enhanced digestion to produce Class A biosolids, which can be used in home gardens and landscaping.

1.10.9 Permit Process

1.10.9.1 Siting an Essential Public Facility

Washington's Growth Management Act (GMA) requires local governments to establish a process for identifying and siting essential public facilities (EPFs) (RCW 36.70A.200). EPFs include those facilities that are typically difficult to site, such as airports, regional transportation facilities, correctional facilities, and wastewater treatment plants. The GMA states that no local comprehensive plan or development regulation may preclude the siting of essential public facilities.

King County has reviewed the Snohomish County comprehensive plan and ordinances governing essential public facilities and the City of Edmonds comprehensive plan and zoning code (see Documents Incorporated by Reference in the Fact Sheet at the beginning of this document). This review indicates that some of the ordinances and zoning provisions would preclude siting an essential public facility such as Brightwater at the Route 9 or Unocal site. King County filed two separate petitions to the Central Puget Sound Growth Management Hearings Board (GMA Board) to determine if local regulations that would be applied to a permit application to site the Brightwater Treatment Plant at either the Route 9 or the Unocal site comply with the EPF provisions of the GMA.

The GMA Board has ruled on both petitions. The GMA Board ruled that it is not necessary for King County to bring a petition at this time challenging Edmonds' ordinances. However, the GMA Board decided that Snohomish County's EPF ordinance did not comply with the GMA, and it gave Snohomish County until January 14, 2004, to take appropriate legislative action to bring the EPF provisions of its development regulations into compliance with the goals and requirements of the GMA. In late October 2003, in response to the GMA Board's ruling, Snohomish County adopted a moratorium that will preclude the siting of any Brightwater facilities while the moratorium is in effect.

Until the Snohomish County Council takes action consistent with the GMA Board's order, it is not possible to ascertain the final form of Snohomish County's EPF regulations. If the Route 9 site is selected for the Brightwater Treatment Plant, King County would address Snohomish County's EPF development regulations when King County is ready to submit permits for the project.

Please see Chapters 2 and 11 of this Final EIS for a more detailed discussion of the GMA, the EPF siting processes for Snohomish County and the City of Edmonds, and the relationship of those processes to the Brightwater proposal.

1.10.9.2 Ecology Approval of Facility Plan

Construction of a new wastewater treatment system in the State of Washington requires approval of a Facility Plan by the Washington State Department of Ecology. A Facility Plan shows how a proposed wastewater treatment system will be designed to ensure that public health and water quality objectives of the State of Washington will be met. It establishes a basis for the design and review of plans and specifications for the treatment system. The facility plan is prepared under the requirements of Washington Administrative Code (WAC) 173-240-060 and the Code of Federal Regulations (CFR) 40 CFR Part 35. At this writing, King County was planning to submit a final draft of the Facility Plan to Ecology in late 2003 or early 2004. The preliminary working draft of the Brightwater Facility Plan (Appendix 3-L) describes the existing and future wastewater service needs in the King County Service Area and describes how the proposed treatment, conveyance, and effluent management facilities will be developed. Approval of the Facility Plan for the Brightwater Regional Wastewater Treatment System is anticipated in 2004 following issuance of the Final EIS.

1.10.9.3 Compliance with Endangered Species Act

The Brightwater Draft EIS indicated that Brightwater compliance with the Endangered Species Act (ESA) may be achieved, in part, through the Habitat Conservation Plan (HCP) being developed by the King County Wastewater Treatment Division or solely through ESA Section 7 consultation between the U.S. Army Corps of Engineers and any other federal agency responsible for discretionary permitting or funding of Brightwater-related construction.

King County now has determined that Brightwater compliance with the ESA will not be achieved through the HCP. The planning efforts and environmental review processes for the HCP and the Brightwater System are separate. Brightwater will comply with the Endangered Species Act solely through consultation under ESA Section 7.

The HCP, if completed, will address on a programmatic level the King County Wastewater Treatment Division's construction, operation, and maintenance activities at non-Brightwater facilities. It will identify the possible pathways through which those activities could potentially "take"[6] listed species and other species proposed for coverage. The HCP also will identify methods to avoid or minimize any such take and (where take is unavoidable) to mitigate the impact of such take to the maximum extent practicable. If the HCP is approved, compliance with those methods and measures would become a condition of the construction of future non-Brightwater facilities.

[6] "Take" as defined by the Endangered Species Act means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" [USC Title 16, Chapter 35, Section 1532(19)]. The prohibition on take includes not taking actions that may result in the destruction or adverse modification of critical habitat.

Under the National Environmental Policy Act (NEPA), the National Oceanographic and Atmospheric Administration Fisheries and the U.S. Fish and Wildlife Service (the Services) will prepare draft and final environmental impact statements for the HCP subject to public review and comment. Public notice for the scoping of a NEPA environmental impact statement on the HCP was provided in June 2003 via an extensive mailing and publication in the Federal Register. Public Hearings were held on June 17, June 24, and June 26, 2003, and the scoping period ended August 11, 2003. The Services now are preparing a draft and final EIS.

The Services will perform inter- and intra-Service consultations on the HCP under ESA Section 7 to achieve compliance with the Endangered Species Act.

1.10.9.4 Mitigation of Impacts

Mitigation under the State Environmental Policy Act (SEPA) is intended to address specific impacts identified in the environmental review of the proposal. Decisions on specific mitigation measures will be made at several steps in the process. King County may incorporate additional mitigation measures identified by the community through the Brightwater public involvement process. Permitting agencies may require additional or revised mitigation measures based on impacts identified in the EIS or during permit review. For example, a Community-Oriented Building is a potential mitigation measure identified by the community. The exact location for such a building cannot be determined until the conclusion of permitting even though it is represented in a specific location for the Route 9 alternatives in this Final EIS. Identifying a location in the EIS allows analysis of the potential impacts of such a facility. A Community-Oriented Building for the Unocal System could be located offsite at a location yet to be determined.

Another mitigation measure that could be required by permitting agencies is the use of a barge dock for construction. The Brightwater Draft EIS discussed the possibility of using a barge dock for hauling soils and materials during construction of the Unocal Treatment Plant alternative. The possibility also exists for using a barge dock at Point Wells in outfall Zone 7S for construction of the outfall for the Route 9 alternatives and for the Route 9–195th Street tunnel from Portal 5 to Portal 19. However, a barge dock at either location is not part of the current proposal as described in this EIS, and impacts of the Brightwater proposal are assessed assuming that all equipment, materials, and soils would be hauled by truck. It is possible that as design progresses and discussions begin with permitting agencies, a barge dock at either Point Wells or Unocal may be required as mitigation for construction-related traffic impacts. In preparation for those discussions, King County will investigate the feasibility of a construction barge dock as a potential mitigation measure at the selected site. Any required environmental analysis would be completed at a later date.

Permitting agencies that could require mitigation include state and local agencies such as the Washington State Department of Ecology, the Washington State Department of Natural Resources, and the local agencies that have jurisdiction over the treatment plant

site, conveyance facilities, and outfall. Federal agencies, such as the U.S. Army Corps of Engineers, are not bound by SEPA, but they may use the SEPA analysis when completing their analysis under the National Environmental Policy Act. In some cases, permitting agencies may request measures to address specific impacts that are different from the measures proposed in this Final EIS. Decisions regarding the best way to mitigate specific impacts would be made during permit review. The mitigation measures proposed in the Final EIS are intended to demonstrate to agencies and jurisdictions how King County intends to mitigate probable significant adverse environmental impacts identified in the EIS.

1.11 Environmental Review

The Brightwater Environmental Impact Statement (EIS) is part of a phased environmental review of the proposed Brightwater Regional Wastewater Treatment System under the State Environmental Policy Act (SEPA). Environmental review of the proposal began with a programmatic evaluation, in the Regional Wastewater Services Plan (RWSP) EIS, of a regional plan and policies for wastewater services within the King County Service Area through 2040. The current EIS is a project-level analysis of the impacts of constructing and operating the system. Additional environmental review may take place in the future if there are changes to the proposal or if new impacts are identified that require further analysis under SEPA.

1.11.1 Role of EIS in Decisionmaking Process

The SEPA Rules contemplate that the general welfare, social, economic, and other requirements and essential considerations of state policy will be taken into account in weighing and balancing alternatives and in making final decisions on a proposal (WAC 197-11-448). An EIS is meant to provide information on the environmental impacts of a proposal; other factors may be used by agencies and officials as well when making decisions.

The King County Executive's final decision on the Brightwater proposal will be based on several considerations: the analysis in the EIS; comments from federal, state, and local agencies and tribal governments; comments from the public and elected officials; and other factors such as cost and regional policies. In addition, permitting agencies will determine whether or not the proposed action is consistent with the regulations that they are responsible for implementing.

SEPA states in WAC 197-11-660 that state and local governmental agencies may condition or deny a proposal under SEPA provided that mitigation measures or denials are based on policies, plans, rules, or regulations formally designated by the agency as a basis for doing so and in effect when the Draft EIS is issued. Mitigation may be different than what was identified in an EIS, but it must be related to specific, adverse

environmental impacts identified in the EIS, and it must be reasonable and capable of being accomplished. (Federal agencies, such as the U.S. Army Corps of Engineers, are not bound by SEPA, but they may use the SEPA analysis when completing their analysis under the National Environmental Policy Act.)

1.11.2 Prior Programmatic Review

This EIS for the Brightwater Regional Wastewater Treatment System has been preceded by extensive phased environmental review under SEPA. The SEPA Rules require agencies to begin environmental review at the earliest possible point in the planning and decision making process, when the principal features of a proposal and its environmental impacts can be reasonably identified (WAC 197-11-055). The SEPA Rules also encourage phased review (WAC 197-11-060[5]). Phased review is appropriate when the sequence is from a nonproject document to a document of narrower scope. The project-level review in this EIS was preceded by programmatic environmental review of several earlier planning documents and ordinances, including the following:

- Environmental reviews by local jurisdictions conducted in conjunction with their respective comprehensive plans, which establish land use needs and forecast population as required by the Washington State Growth Management Act (GMA).
- The EIS for the Regional Wastewater Services Plan, which identified the need for a new wastewater treatment system in the region and considered a range of alternatives to meet the need. The impacts of these alternatives were evaluated at a programmatic level in the EIS.
- SEPA reviews conducted prior to the King County Council's adoption of several ordinances that established a siting process for the Brightwater System.

The RWSP included regional policies that address a range of wastewater improvements necessary to ensure that the long-term wastewater needs of this region would be met. The policies specifically call for construction of a wastewater treatment system in north King County or south Snohomish County with the capacity to treat up to 36 mgd of average wet-weather flow by 2010. The EIS for the RWSP conducted a programmatic evaluation of the impacts of constructing such a system. The RWSP took into account the GMA comprehensive plans adopted by cities and counties in the region and population forecasts based on data provided by the Puget Sound Regional Council. Adoption of each of the local GMA plans was preceded by environmental review under SEPA. The RWSP EIS was issued in April 1998 and is incorporated by reference into the Brightwater EIS (King County, 1998). (See the Fact Sheet at the beginning of this document.)

After adoption of the RWSP, King County conducted programmatic environmental reviews of several proposed ordinances that would establish policies to guide the siting of Brightwater facilities. The ordinances subsequently were adopted by the King County

Council.[7] The adopted policies established criteria for screening potential sites and selecting specific sites for evaluation in an EIS prior to final site selection. Determinations of Nonsignificance for each of the ordinances are part of the phased environmental review of the Brightwater proposal and are incorporated by reference into the Brightwater EIS.

1.11.3 Brightwater Project-Level Review

The Brightwater EIS conducts a project-level analysis of the probable significant adverse environmental impacts of the proposed Brightwater System alternatives. This project-level analysis builds on the previous programmatic review. The action alternatives evaluated in this EIS are as follows:

- The Brightwater System with a treatment plant at the Route 9 site in unincorporated Snohomish County, an influent corridor that extends from Kenmore to the Route 9 site, an effluent corridor along NE 195th Street and the King-Snohomish County line, and an outfall near Point Wells.
- The Brightwater System with a treatment plant at the Route 9 site in unincorporated Snohomish County, an influent corridor that extends from Kenmore to the Route 9 site, an effluent corridor along 228th Street SE/SW and the King-Snohomish County line, and an outfall near Point Wells.
- The Brightwater System with a treatment plant at the Unocal site in the City of Edmonds, an influent corridor extending from Bothell through Kenmore and Lake Forest Park to the Unocal site, and an outfall near Edwards Point.

The significant impacts of a No Action Alternative also are analyzed in this EIS.

1.11.4 Existing Development Regulations in Local Jurisdictions and Regulatory Agencies

Under the State Environmental Policy Act, a SEPA Responsible Official is authorized to take into account the analysis and mitigation of impacts required by local, state, and federal regulations (RCW 43.21C.240 and WAC 197-11-158). Many of the impacts of constructing and operating Brightwater facilities will be mitigated by applicable regulations of host jurisdictions and state or federal regulatory agencies. Although analysis and mitigation of impacts under SEPA is not required where such impacts would

[7] Ordinance 14043, adopted on March 2, 2001; Ordinance 14107, adopted on May 24, 2001; and Ordinance 14278, adopted on December 10, 2001.

be adequately mitigated under local, state, or federal regulations, King County nevertheless has fully analyzed such impacts and identified mitigation measures in this EIS.

1.11.5 Future Environmental Review

When a decision is made on which of the Brightwater System alternatives will be constructed and as the selected system moves forward into design, it is possible that elements of the project description could change or that new information about environmental impacts would become known. If new information about the proposal indicates that it would, as mitigated, have significant adverse environmental impacts that are beyond the range of those evaluated in this EIS, or if the proposal changes substantially so that it would be likely to have significant adverse environmental impacts that are beyond the range of those evaluated in this EIS, appropriate environmental review would be conducted at that time.

1.12 References

FHWA (U.S. Department of Transportation, Federal Highway Administration), WSDOT (Washington State Department of Transportation), and Edmonds (City of Edmonds, WA). 1998. *SR 104 Edmonds Crossing: Connecting ferries, buses, and rail. Draft Environmental Impact Statement and draft section 4(f) evaluation.* Prepared by CH2M HILL, Bellevue, WA. February 1998.

King County. 1998. *Final Environmental Impact Statement for the Regional Wastewater Services Plan*. Seattle, WA: King County Department of Natural Resources, Wastewater Treatment Division. April 1998.

The figures for this chapter are provided as separate files on this web site.

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LIST OF FIGURES